

WHAT IS CLAIMED IS:

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1 1. A stored data element format representing a portion of an image, said
2 stored data element comprising:
3 a multi-bit alpha component field that may or may not be present in a
4 particular instance of said format; and
5 a portion encoding at least one color component, said portion having a first
6 length if said multi-bit alpha component field is present and having a second
7 length greater than said first length if said multi-bit alpha component field is not
8 present.

1 2. A stored data element format as in claim 1 further including a flag that
2 indicates whether said multi-bit alpha component field is present in a particular
3 instance of said format.

1 3. A texture map including:
2 a first texel encoded with a semi-transparency value and having first color
3 resolution; and
4 a second texel encoded without any semi-transparency value and having
5 second color resolution greater than said first color resolution.

1 4. A texture map as in claim 3 wherein said first and second texels each
2 further include a flag indicating whether said texel is encoded with a multi-bit
3 semi-transparency value.

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1 5. A computer graphics system including a storage device storing plural
2 data elements corresponding to color image elements, said data elements each

including color information and an indicator field indicating whether or not said data element provides a further, multi-bit field encoding semi-transparency.

6. A system as in claim 5 wherein said indicator field comprises a single bit flag.

7. A system as in claim 5 wherein ones of said plural data elements that do not encode semi-transparency use the space otherwise occupied by said multi-bit field to encode said color information at higher resolution.

8. A system as in claim 5 wherein said color information encodes each of the three primary colors.

9. A system as in claim 5 wherein each said data element has a 16-bit length, and said indicator field comprises a single bit.

10. A system as in claim 5 wherein said multi-bit field consists of three bits.

11. A system as in claim 5 further including a data converter coupled to said storage device, said data converter converting between said multi-bit semi-transparency encoding and higher resolution alpha information.

12. A system as in claim 11 wherein said data converter quantizes or dequantizes said higher resolution alpha information in equal steps.

13. A system as in claim 11 wherein said data converter quantizes or dequantizes said higher resolution alpha information in eight equal steps.

1 14. A color image element encoding format comprising:
 2 an indicator field indicating whether an instance of said format is capable of
 3 encoding semi-transparency; and
 4 at least one variable sized field encoding further information concerning
 5 said color image element, said at least one variable sized field having a first length
 6 if said indicator field indicates said format instance is incapable of encoding semi-
 7 transparency, said at least one variable sized field having a second length less than
 8 said first length if said indicator field indicates said format instance is capable of
 9 encoding semi-transparency.

1 15. A color image element encoding format as in claim 14 wherein said
 2 variable sized field encodes color information.

1 16. A color image element encoding format as in claim 14 wherein said
 2 format includes a multi-bit alpha field if said indicator field indicates said format
 3 instance is capable of encoding semi-transparency.

1 17. A color image element as in claim 14 wherein said color image element
 2 encoding format encodes texels.

1 18. A method of encoding an image element comprising:
 2 (a) specifying whether said image element will encode semi-transparency;
 3 (b) if said specifying step specifies that said image element will encode
 4 semi-transparency, allocating a set of plural bits within an encoding format to
 5 encode alpha; and

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 0053E9060200
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6 (c) if said specifying step specifies that said image element will not encode
7 semi-transparency, allocating said set of plural bits to encode another
8 characteristic of said image element.

1 19. A method as in claim 18 wherein said image element comprises a texel.

1 20. A method as in claim 18 wherein said step (c) comprises encoding color
2 of said image element at higher resolution through use of said set of plural bits.

1 21. An alpha component converter that converts between first and second
2 resolutions of semi-transparency information, said converter quantizing or
3 dequantizing first resolution semi-transparency information into a predetermined
4 number of equal sized steps to form second resolution semi-transparency
5 information.

1 22. The alpha component converter of claim 21 wherein the number of
2 equal sized steps is eight.

1 23. A method of generating a cutout image within a 3D graphics system
2 having a 3D graphics pipeline that generates images based on polygons, said
3 graphics pipeline including a texture mapping unit storing a texture map including
4 a first set of semi-transparent colored texels, and a second set of opaque, colored
5 texels, said method comprising:

6 encoding each of said texels in a variable bit encoding format wherein a
7 predetermined bit field within said format is allocated to encode semi-transparency
8 of said first set of texels, and said predetermined bit field is allocated to encode
9 coloration of said second set of texels;

10 applying said texel encoding as a matte to a polygon using at least one alpha
11 operation, to generate a set of image elements; and
12 anti-aliasing said image elements.